

**CLAIMS:**

1. (Previously Presented) A method of manufacturing a continuous sucker rod coil comprising:
  - (a) selecting a plurality of input coils, each input coil having the same uniform hardness, and each input coil having two free ends;
  - b) fusing adjacent free ends of adjacent input coils together to form one continuous length of rod, said fusing creating fused areas and a heat-affected zone at each fused area;
  - (c) treating each of said heat-affected zones to alleviate irregularities induced during fusing; and
  - (d) winding said continuous length of rod into a finished coil.
2. (Previously Presented) The method described in claim 1, further comprising the step of removing mill scale from the surface of the rod.
3. (Previously Presented) The method described in claim 1, further comprising the step of placing the surface of the rod into compression.
4. (Previously Presented) The method described in claim 2, further comprising the step of placing the surface of the rod into compression.
5. (Previously Presented) The method described in claim 4, wherein the step of removing mill scale from the surface of the rod and the step of placing the surface of the rod into compression are accomplished by shot-peening.
6. (Previously Presented) The method of claim 1, further comprising the step of shot-peening the surface of the continuous rod.

7. (Previously Presented) The method described in claim 6, where said shot-peening occurs after said fusing step.

8. (Previously Presented) The method described in claim 6, where said shot-peening occurs before said fusing step.

9. (Previously Presented) The method described in claim 1, further comprising the steps of inspecting for flaws and marking flaws for removal.

10. (Previously Presented) The method described in claim 9, where said inspecting and marking steps occur after said fusing step.

11. (Previously Presented) The method described in claim 9, where said inspecting and marking steps occur before said fusing step.

12. (Previously Presented) The method of claim 10, further comprising the steps of:

reversing said rod to place flaws marked for removal to the beginning of said fusing step;

cutting out flaws creating further adjacent free ends;

fusing said further adjacent free ends to create fused areas; and

inspecting said fused areas and marking said fused areas for flaws.

13. (Previously Presented) The method of claim 6, further comprising the steps of:

inspecting for flaws and marking said flaws for removal, said inspecting and marking steps occurring after said fusing step;

reversing said rod to place flaws marked for removal to the beginning of said fusing step;

removing said flaws creating further adjacent free ends;  
fusing said further adjacent free ends to create fused areas; and  
then shot-peening and flaw inspecting said fused areas.

14. (Previously Presented) A method of manufacturing a continuous sucker rod coil comprising:

- (a) selecting one or more input coils each with the same consistent hardness, each input coil having two free ends;
- (b) inspecting said input coil for flaws;
- (c) marking said flaws;
- (d) removing said flaws creating further free ends in said input coil;
- (e) fusing adjacent free ends together to form one continuous length of rod, each of said fusing creating a fused area and a heat-affected zone at each fused area;
- (f) treating each of said heat-affected zones to alleviate irregularities induced during fusing; and
- (g) winding said continuous length of rod into a finished coil.

15. (Previously Presented) The method as described in claim 14, wherein the step of inspecting the rod for flaws is a visual inspection of said input coil and includes marking of said flaws.

16. (Previously Presented) The method as described in claim 14, wherein the step of inspecting the rod for flaws is by eddy-current flaw detection along the length of the rod and includes marking of said flaws.

17. (Previously Presented) The method as described in claim 14, wherein the step of inspecting the rod for flaws is a visual inspection of said input coil and by eddy-current flaw detection along the length of the rod and includes marking of said flaws.

18. (Previously Presented) The method as described in claim 14, further comprising the step of shot-peening the surface of the rod.
19. (Previously Presented) The method described in claim 1, further comprising the step of coating the surface of said input coil with a corrosion inhibitor.
20. (Previously Presented) The method described in claim 1, further comprising the step of straightening said input coil.
21. (Previously Presented) The method described in claim 14, further comprising the step of straightening said input coil.
22. (Previously Presented) The method of claim 1, wherein the irregularities are residual stress induced during fusing.
23. (Previously Presented) The method of claim 14, wherein the irregularities are residual stress induced during fusing.